USC Schaeffer

Leonard D. Schaeffer Center
for Health Policy & Economics

Annual Report 2021

Finding Solutions for a More Affordable Healthcare System

USC Schaeffer Center Annual Report 2021

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Affordability:

We work to improve health through policy solutions that ensure access to high-value care and a sustainable healthcare system.

Message from the Directors

A More Resilient, Affordable Healthcare System

As healthcare spending approaches 20% of gross domestic product, the pressure to "bend the cost curve" has never been stronger. Many have argued that the answer is to just lower prices by government fiat.

However, the right policies need to focus on the price of health, not healthcare. This is especially true for diseases with few or no treatment options. The least affordable drugs and technologies are those that haven't been discovered. Just think about how much society was willing to pay for an effective COVID-19 vaccine.

At the Schaeffer Center, we've spent over a decade conducting evidence-based research to ensure access to high-value healthcare, build a healthcare system that is resilient and sustainable, and encourage biomedical innovation that improves quality of life.

Cancer provides a poignant example. Our experts have developed pricing models to reward high-value advances while protecting against paying for treatments that don't work. We've also shown that outcomes improve significantly—and disparities can be reduced—when the disease is caught early. Yet not everyone receives recommended routine screenings,

"At the Schaeffer Center, we've spent over a decade conducting evidence-based research to ensure access to high-value healthcare, build a healthcare system that is resilient and sustainable, and encourage biomedical innovation that improves quality of life."

Dana Goldman and Erin Trish, Co-Directors, USC Schaeffer Center

which contributes to racial and ethnic disparities in cancer survival rates. Schaeffer Center research found that blood-based tests that can detect multiple cancers could be a critical tool in addressing these challenges.

Passing savings on to consumers can improve adherence and access to medications, but complicated, opaque payment systems do not always result in lower costs for patients. Over the past year, our researchers illuminated the role of intermediaries in the pharmaceutical supply chain.

We were thrilled to see policymakers take note of this work as they develop solutions to address the high and rising drug costs consumers are shouldering. Of course, lower drug prices mean little to underserved areas that lack pharmacies in the first place. Groundbreaking Schaeffer Center work highlights the issue of pharmacy deserts—an often-overlooked factor in healthcare disparities.

An affordable healthcare system necessitates evaluating the full cost—not just the cost borne by the patient. Through the leadership of the USC-Brookings Schaeffer Initiative for Health Policy, the federal No Surprises Act—which eliminates the practice of surprise medical billing—shields patients from excessive billing for out-of-network services while simultaneously containing costs for healthcare providers and payers.

Our scholars collaborate across disciplines to conduct research aimed at improving value in health. This year we welcomed Richard Frank as the new director of the USC-Brookings Schaeffer Initiative for Health Policy. He succeeds Paul Ginsburg, who continues as a Schaeffer Center senior fellow—and whose exemplary leadership in health policy resulted in his election to the National Academy of Medicine. We also welcomed Matthew Kahn, provost professor of economics at the USC Dornsife College of Letters, Arts and Sciences, who will lead our newest research program—the Healthcare Markets Initiative.

As always, we remain grateful to Leonard Schaeffer and his wife, Pamela, our Advisory Board, and the partnership of USC's Price School of Public Policy and School of Pharmacy. Their support and the excellence of our fellows ensure that the Schaeffer Center will always be a beacon in guiding policymakers and the public toward an affordable, sustainable healthcare system.

Dana Goldman
Erin Trish
Co-Directors, USC Schaeffer Center

Dana Goldman and Erin Trish

Schaeffer Center 2021 Year in Review

The Schaeffer Center's impact and influence continue to grow—from media mentions and attendance at webinars to social media followers and publication in high-impact journals. Policymakers, the public and the media rely upon our experts for evidence-based research and analysis of some of the most important topics in healthcare economics and policy today. Here are just a few of the highlights from our work in 2021.

23%

increase in website pageviews in 2021, with nearly half a million pageviews across the Schaeffer Center website

73

scholars affiliated with the Center, including 3 Nobel laureates

Over the past year, the Schaeffer Center's presence across social media platforms grew substantially, driven by increased engagement from media and stakeholders.

LinkedIn
37% increase in followers

Instagram
36% increase in followers

Twitter
13% increase in followers

23

virtual webinars, seminars and conferences in 2021

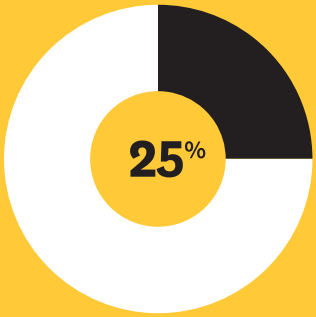
15K

views of 2021 webinars across Zoom, Facebook and YouTube

5,875

Media Mentions including *The New York Times*, *Wall Street Journal*, *Washington Post*, CNN and Fox News

High-Impact Research



of Schaeffer Center studies published in 2021 were ranked in the top 5% of all research outputs scored by Altmetric, an indicator of attention, dissemination and impact online

In 2021, our experts authored studies published in high-impact journals including *Health Affairs* and the *Journal of the American Medical Association*.

290+

citations in government documents since 2009, including 8 of the last 9 annual Economic Reports of the President

1,475+

journal articles authored by Schaeffer experts since 2009

30,000

mentions in the media since 2009

Before policymakers attempt to address rising prescription drug costs, they need to follow the money.

As drug spending rises, so do calls to rein in costs—but some responses risk stunting the medical discoveries essential to saving and improving lives. The Schaeffer Center works to shine a spotlight on the big picture to better inform pricing and reimbursement policies.

Value of Life Sciences Innovation

Fostering Biomedical Advances and Ensuring Patient Access

Policymakers and the media tend to focus on manufacturers when discussing the costs of prescription drugs, with little attention paid to the middlemen—wholesalers, pharmacy benefit managers (PBMs), pharmacies and insurance companies—who also add costs but contribute little innovation. Major Schaeffer Center studies in 2021 investigated these and other aspects of the pharmaceutical distribution system to reveal the rewards to different distribution system players.

The Schaeffer Center Value of Life Sciences Innovation program provides evidence-based strategies to enhance cost-effective healthcare delivery while ensuring a healthy ecosystem for ongoing innovation.

Promoting Competition in the Supply Chain

Improving value and expanding access to care requires uncovering where savings can be achieved. To determine whether some players are earning excessive profits relative to the risk they bear, Neeraj Sood, Karen Mulligan and Kimberly Zhong factored in financial risk to calculate the investment returns for manufacturers and middlemen in the pharmaceutical supply chain.

After accounting for research and development, the authors showed that risk-adjusted returns were actually lower for pharmaceutical manufacturers compared to the Standard and Poor's 500 index (1.7% vs. 3.6%). However, risk-adjusted returns for biotech manufacturers (9.6%), wholesalers (8.1%) and insurers/PBM/retailers (5.9%) outpaced the S&P 500 from 2013–2018, according to the study.

Revealing the Role of Middlemen

The question of who is benefiting from rising insulin prices remained a mystery until Schaeffer Center experts analyzed distribution complexities to find answers—offering one of the most comprehensive looks at the insulin distribution system. In research published in *JAMA Health Forum*, Karen Van Nuys, Neeraj Sood and Rocio Ribero analyzed the money flow across the web of insulin manufacturers, wholesalers, pharmacies, PBMs and health plans.

The team found that, while the total expenditures per unit of insulin remained relatively flat between 2014 and 2018, middlemen in the distribution system collected nearly 53% of the net proceeds from insulin sales in 2018—up from 30% in 2014. Meanwhile the share going to manufacturers decreased by 33%.

While manufacturers are accepting lower prices, patients are not seeing the benefit of this decrease. "Policymakers should bring together all players in the distribution system, require a transparent accounting of financial flows at each step, and from there develop solutions that improve health and system-wide affordability," Van Nuys says.

"Clearly all entities in the pharmaceutical distribution system profit from the sale of insulin," Sood notes. "But these data suggest that increasing profits to intermediaries in the system are playing a key role in keeping net expenditures high."

Passing on Savings to Consumers

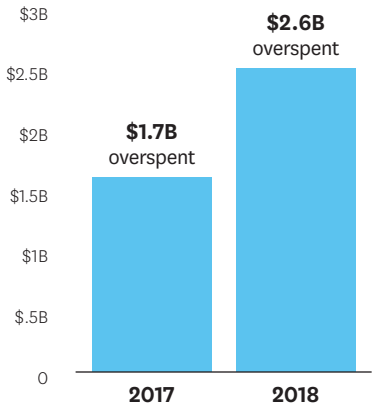
Market efficiency is crucial to cost-effectiveness. For research published in *JAMA Internal Medicine*, Erin Trish, Karen Van Nuys, Rocio Ribero and Geoffrey Joyce examined what Medicare Part D plans paid for the most commonly prescribed generic drugs compared to the cash prices available to Costco members for the same prescriptions in 2017 and 2018. Across more than 1.4 billion Part D claims for 184 products, they found that Medicare plans overspent by 13% in 2017 and almost 21% in 2018, compared to Costco. These overpayments amounted to $2.6 billion in 2018 alone.

Medicare Part D is administered through private plans that negotiate via PBMs on behalf of the Medicare system. While PBMs are large, sophisticated agents that can negotiate low prices from competing manufacturers, the problem, according to the research, is that PBMs and other intermediaries in the system are not passing the savings from the negotiated prices to the plans and the patients.

"Our analysis shows that, in systems like Costco's, where incentives are set up to deliver value directly to the consumer at the pharmacy counter, that's what happens," Trish says. "It's time to fix those incentives in the Medicare Part D system to put the patient first."

The study—which found $2.6 billion in 2018 overpayments on just 184 drugs—also shows that more attention should be paid to generic prices and not just brand-name drug costs. "Efforts to reduce prescription drug

Compared to Costco member prices, Medicare overspent by 13% in 2017 and almost 21% in 2018 on 184 generic drugs.



Karen Van Nuys, Executive Director, Value of Life Sciences Innovation Program

prices tend to focus on brand-name medicines, but the opaque pharmaceutical supply system can also cause health plans and taxpayers to overpay for generics," Joyce notes.

Reducing Disparities in Cancer Detection

Early cancer detection is crucial to enhancing patient survival rates, yet economic obstacles and cultural attitudes can keep Black and Latino patients from undergoing recommended screenings. A study by Alison Sexton Ward, Karen Van Nuys and Darius Lakdawalla addressed the benefits of multi-cancer blood-based tests—which do not require a specialist to adminster them—while also examining the factors driving disparities.

Insufficient insurance coverage and a lack of trust in healthcare providers that can stem from the disproportionately lower-quality facilities that serve many minority communities are among the factors driving disparities in health outcomes.

"The promise of these tests will only be realized if we are able to provide broad access to vulnerable populations," Lakdawalla says.

"Intermediaries are especially important because each one adds a layer of complexity that increases the costs borne by patients and payers. We need to look at whether they are also adding comparable value."

Karen Van Nuys, Executive Director, Value of Life Sciences Innovation Program

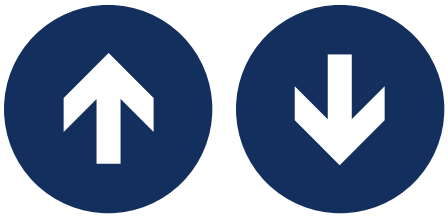
19%

higher death rates from cancer for non-Hispanic Black men than for non-Hispanic white men

13%

higher death rates for non-Hispanic Black women than for non-Hispanic white women

Who is profiting from rising insulin prices? Schaeffer Center experts analyzed the flow of money to find the answers.



Middlemen +76% increase in net proceeds for insulin middlemen

Manufacturers -33% decrease in net proceeds for manufacturers

Behavioral Sciences
Motivating Actions to Improve Adherence and Health

"The start of the pandemic occurred while we saw fentanyl infiltrating the West Coast. We find this challenging confluence of events—including the stay-at-home orders—impacted opioid-related behaviors differently across communities."

Jason Doctor, Co-Director, Behavioral Sciences Program

Behavioral science blends insights from psychology, economics and other social sciences to understand how people make decisions. The Schaeffer Center applies the field's knowledge to find ways to improve health, including understanding decision-making surrounding COVID-19 and opioid use.

Locking Down Opioid Fatalities

Early in the pandemic, many cities swiftly enacted stay-at-home orders for public safety, but these policies also had tragic side effects for some populations. Jason Doctor led research investigating the impact of lockdown orders on fatal opioid overdoses. The study, published in *Drug and Alcohol Dependence*, found that stay-at-home directives implemented during March and April 2020 were associated with increased opioid-related deaths among white populations, while such fatalities decreased among Black, Asian and Hispanic populations.

"The start of the pandemic occurred while we saw fentanyl infiltrating the West Coast," Doctor says. "We find this challenging confluence of events—including the stay-at-home

56%

increase in opioid-related deaths in Los Angeles County during the first four months of 2020, compared to 2019

orders—impacted opioid-related behaviors differently across communities."

The people who died were mostly white males residing in areas where a smaller share of the adult population has a bachelor's degree. The decrease in face-to-face treatment options that followed the orders may have contributed to this increase in overdoses, Doctor says. Further, while the research was limited to Los Angeles, its findings mirror troubling trends among middle-aged white Americans across the country who live in areas where few people hold bachelor's degrees.

Promoting Protective Behaviors

The COVID-19 pandemic has forced us to learn new protective behaviors against infectious disease. But whether individuals adopt these measures may depend in part on how they associate COVID-19 with other infectious diseases.

Wändi Bruine de Bruin led a study, published in *Social Science & Medicine*, that asked 6,534 U.S. adults to list conditions that came to mind when they thought of COVID-19. Participants also completed questions that asked about demographics, risk perceptions and protective behaviors. Seasonal influenza (59%) was the most common illness mentioned across all demographic groups, followed by pandemic influenza (28%), SARS/MERS (27%), Ebola (14%), common cold (11%) and pneumonia (10%).

With few exceptions, mentions of seasonal influenza or the common cold tended to be associated with a lower likelihood of self-reported protective measures: 55% of individuals who associated COVID-19 with seasonal flu and 51% of those who associated it with the common cold reported that they were avoiding crowds as a protective behavior. In comparison, 62% of people associating COVID-19 with pneumonia said they were actively avoiding crowds.

The findings suggest that public health communicators need to recognize the potential impact of infectious disease comparisons on public behavior—and focus on what protective behaviors are most needed in the particular situation.

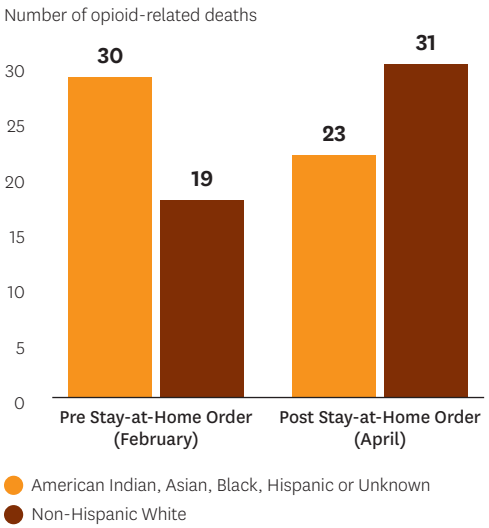
Communicating well about any topic—from COVID-19 to climate change—requires understanding the audience. Bruine de Bruin is an expert in risk communication and is working to expand this research to encompass a more global community. With funding from the Lloyd's Register Foundation, she will use insights from the World Risk Poll report to help international organizations make their risk messages more effective.

Understanding Physician Decision-Making

Clinicians frequently over-order tests and treatments that are not in line with prevailing recommendations. This is especially the case when caring for older patient populations. Jason Doctor and colleagues published a study to understand why physicians order these potentially unnecessary tests.

The team found that physicians are aware and knowledgeable of the testing guidelines, but many deferred to patient preference when deciding whether to order a test. Furthermore, clinicians tended to overestimate the benefits of testing and underestimate the harms or downsides. Policymakers and stakeholders interested in decreasing unnecessary testing and treatment in older adults should take these findings into account. This study builds on a body of work by Doctor and colleagues to improve physician decision-making and patient health outcomes.

Stay-at-home orders implemented in L.A. County were linked to increased opioid-related deaths among non-Hispanic whites.



Jason Doctor and Wändi Bruine de Bruin, Co-Directors, Behavioral Sciences Program

Despite efforts to end the opioid crisis, some communities suffered more deaths in 2020 than ever before.

From combating the opioid crisis to eliminating pharmacy deserts, improving health starts at the community level. Schaeffer Center researchers are analyzing the impact of cannabis regulation, pharmacy closures and addiction treatment options that were available during the pandemic to devise better approaches to improve population health.

Population Health

Advancing the Health of Communities and Reducing Disparities

In 2016, nearly 1 in 10 adults were taking opioids that put them at increased risk of overdose.

Reducing Opioid Overdose Risk

While public awareness and efforts to stop addiction and overdoses have intensified, some communities reported higher rates of opioid-related deaths in 2020 than ever before. Recent research led by Dima M. Qato reveals that, although high-risk prescription opioid use has declined, nearly 1 in 10 adults takes opioids that put them at increased risk of an overdose.

"These findings underscore the importance of strengthening the implementation of overdose prevention, particularly naloxone access laws, and harm-reduction strategies," Qato says.

Qato and colleagues examined a representative, 5% sample of anonymized data drawn from individual prescription claims from 2011 though 2016. The study analyzed use among U.S. adults age 18 and older who filled prescriptions at retail pharmacies.

The research team factored in dangerous co-prescriptions of benzodiazepines, a class of sedatives commonly prescribed for anxiety, seizures or insomnia. Combining opioids with benzodiazepines further increases the risk of overdose and death, the investigators found.

More than half of high-risk prescription opioid users received their prescriptions from a single provider. The study detected higher

rates of risk among older consumers, who tended to use Medicare for payment. They were also more likely than their younger counterparts to have multiple prescribers and purchase from multiple pharmacies.

The pandemic, however, may have positively impacted treatment options for individuals with opioid addictions. While these patients have long relied on in-person individual therapy or group support for sustained recovery, such activities became too dangerous in the early days of the pandemic. Rosalie Liccardo Pacula and her colleagues analyzed state and federal responses to the opioid crisis amid the pandemic and found that, while all states and the District of Columbia adopted at least one policy related to treatment access for patients suffering from opioid addiction, no states adopted all policies important to treatment access.

Capping Cannabis Potency

Even as states rush to legalize cannabis, much work remains for public health regulation—especially since the federal government has shied away from issuing nationwide safety standards. One concern is that most states base sales limits on a product's weight instead of the tetrahydrocannabinol (THC) levels that determine potency.

Research by Rosalie Liccardo Pacula reveals that, although wide variation exists in the total grams of THC that can be purchased at once, all states allow sales of 500 doses or more of 10 milligrams per transaction. Such a quantity can supply a typical user for at least a month. Pacula's analysis, published in the *American Journal of Preventive Medicine*, suggests the need for stricter caps.

"Sales limits are usually put in place to encourage moderation and to prevent diversion from the legal to the illegal market," Pacula notes. "The limits applied by U.S. states today will not accomplish either of these objectives."

Improving Screening of Minors

Even though California forbids cannabis dispensaries from selling to minors, a study co-authored by Rosalie Liccardo Pacula reveals the ineffectiveness of these restrictions. Published in *JAMA Pediatrics*, the project sent young researchers to 700 licensed dispensaries across the state to test their screening processes. The field researchers assessed the use of such measures as age-limit signage and ID checkpoints. They also considered the presence of marketing materials that could appeal to children.

Although 97% of the dispensaries employed ID checks, only 12% did so before buyers entered the store. In addition, nearly 68% failed to comply with age-limit signage, and 35% also sold items that could appeal to children and teens.

As more states lift restrictions on recreational cannabis, Pacula recommends mandated random compliance checks and financial penalties for delinquencies. Just as tobacco sales fund checks of cigarette sellers, cannabis companies could support better policing of their dispensaries.

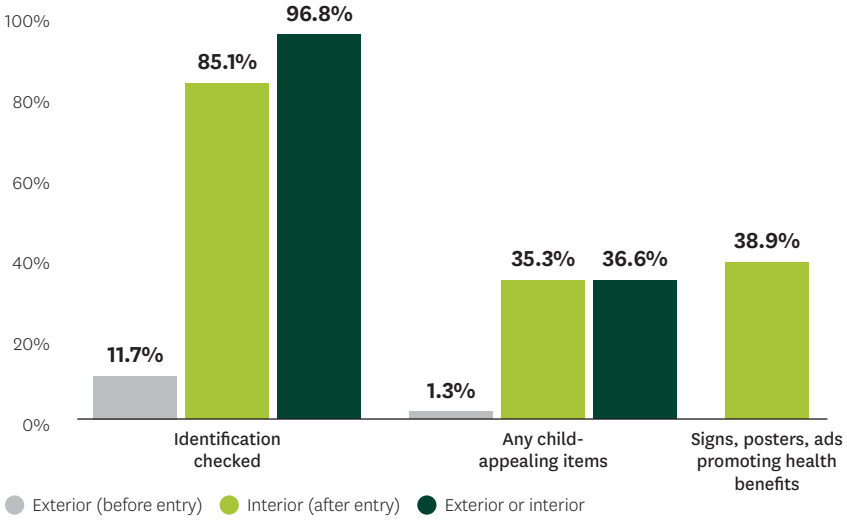
Eliminating Pharmacy Deserts

Pharmacies are an increasingly important point of care for neighborhoods in the U.S. They not only dispense prescription medications but also offer diagnostic, preventive and emergency services. Lack of access to a convenient pharmacy may be an overlooked contributor to persistent racial and ethnic

72%

of opioid users in the U.S. purchased opioids at a single pharmacy in their community

A study of 700 licensed cannabis dispensaries in California found that, while technically compliant, many dispensaries are not compliant with the spirit of the law.



disparities in the use of prescription medications and essential healthcare services within urban areas in the U.S.

A study by Dima M. Qato and colleagues demonstrated that Black and Latino neighborhoods in the 30 most populous U.S. cities had fewer pharmacies than white or diverse neighborhoods between 2007–2015. The team also found that Black and Latino neighborhoods were more likely to experience pharmacy closures compared with other neighborhoods. Qato coined the term pharmacy desert to describe areas where residents cannot fill a prescription within one mile, or half a mile for low-income residents without a vehicle.

"Our findings suggest that addressing disparities in geographic access to pharmacies—including pharmacy closures—is imperative to improving access to essential medications and other healthcare services in segregated minority neighborhoods," Qato says.

These efforts could include policies that encourage pharmacies to locate in pharmacy deserts, such as increases to Medicaid and Medicare reimbursement rates for pharmacies most at risk for closure.

"As more states legalize cannabis, we need better mechanisms, including funding and agency authority for random compliance checks, to ensure that regulations are being followed—just as we did with tobacco."

Rosalie Liccardo Pacula, Schaeffer Center Senior Fellow

Almost one-third of neighborhoods in the largest U.S. cities were pharmacy deserts in 2015, with Black and Hispanic neighborhoods disproportionately more impacted.

26.7%
of white or diverse neighborhoods were pharmacy deserts

33%
of Black neighborhoods were pharmacy deserts

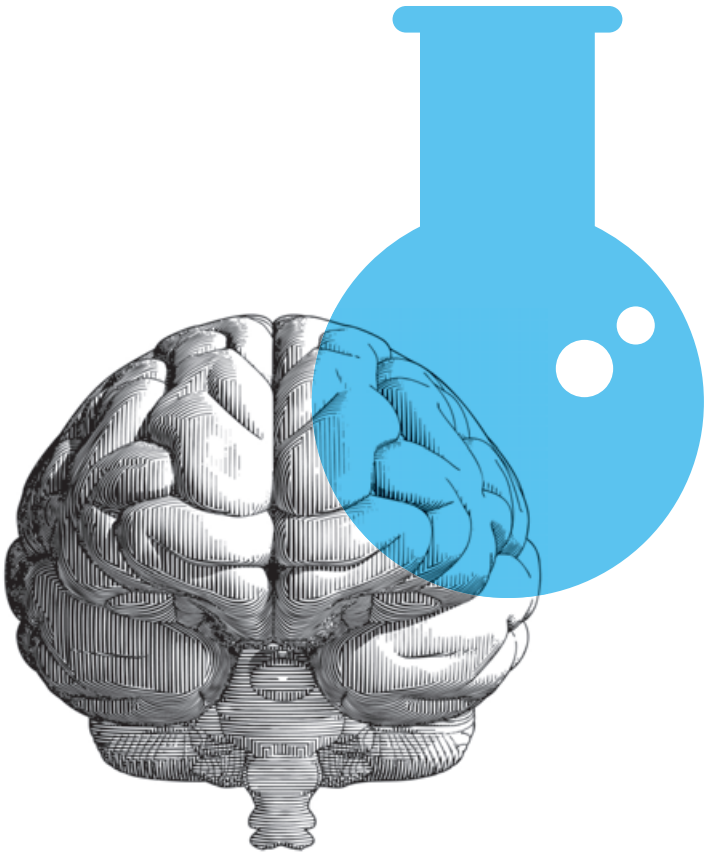
39.5%
of Hispanic neighborhoods were pharmacy deserts

Aging and Cognition

Improving the Lives of Older Adults Through Interdisciplinary Research

"Alzheimer's disease will impose a significant burden on society in the coming decades. It's imperative we identify ways to accelerate the clinical pipeline to change the trajectory."

Julie Zissimopoulos, Co-Director, Aging and Cognition Program

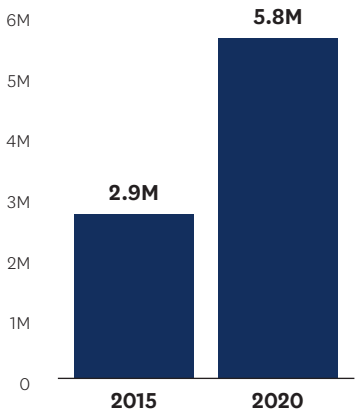


While the healthcare profession has achieved remarkable progress in lengthening life expectancy, more must be done to ensure that those added years are healthier ones. Longer lifespans have led to an explosion in rates of Alzheimer's and other age-related disorders. Approximately 5.8 million people in the U.S. alone have the ultimately fatal condition of Alzheimer's—a number that doubles every five years among those older than 65. However, better therapies are being developed, and the Schaeffer Center is at the forefront of devising strategies to expedite the availability of future breakthroughs to reach everyone who can benefit.

Breaking Down Barriers

Randomized clinical trials are essential to the drug-approval process, but people with Alzheimer's disease face numerous obstacles to accessing them. With support from Gates Ventures, Schaeffer Center investigators surveyed nearly 900 clinical trial personnel, patients, caregivers and physicians to better understand these hurdles and develop strategies for overcoming them.

Approximately 5.8 million people in the U.S. have Alzheimer's—a number that doubles every five years.



The challenges identified include limited physician and patient awareness of the early stages of Alzheimer's, fear of diagnosis, overstretched healthcare systems and a shortage of fast yet inexpensive diagnostics. These barriers result in approximately 99% of potential participants either not considering or never being referred to a clinical trial.

Advancing Social Science Research

Unless cures are found, the cost of caring for patients with Alzheimer's disease and related dementias (ADRD) is projected to reach $1.5 trillion by 2050. Solutions are needed to improve care, support caregivers and quantify the impact of these trends.

Julie Zissimopoulos has been helping lead the national conversation. She co-directs the National Institutes of Health–funded Center for Advancing Sociodemographic and Economic Study of Alzheimer's Disease and the Alzheimer's Disease Resource Center for Minority Aging Research (see page 36). In addition, she was nominated to co-chair the 2022 ADRD Summit Health Equity Sub-Committee. As a member of the National Academies of Sciences, Engineering and Medicine's Committee on Developing a Behavioral and Social Science Research Agenda on Alzheimer's Disease, she produced a report outlining a 10-year research agenda in the behavioral and social sciences as it relates to ADRD.

"Much of the current research into ADRD is focused within biology, biochemistry and pharmaceutical innovation," Zissimopoulos says. "But we know Alzheimer's is also a social disease with devastating socioeconomic impacts. The social sciences have an important role to play in understanding and developing solutions to the burden of ADRD."

This work complements USC's vast achievements in Alzheimer's research, which include mapping its spread in the brain, developing the first regenerative therapy to be tested for the disease and discovering how leaky blood vessels can indicate early onset.

Delivering Palliative Care Optimally

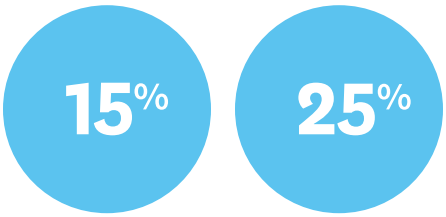
With a focus on improving quality of life and reducing the burden on seriously ill patients and their families, palliative care—provided alongside other therapy—is used to treat pain and other distressing symptoms, address family needs, coordinate care, and offer emotional and spiritual support.

By 2034, more people in the country will be age 65 and older—the group at highest risk for cancer and other serious illness—than under 18. With our aging society, effective palliative care is increasingly vital. But palliative care teams of specialists, nurses, social workers and chaplains are rarely used. Mireille Jacobson, Bryan Tysinger and colleagues participated on a Schaeffer Center advisory committee to develop a research agenda aimed at identifying evidence-based solutions to expand access to such care.

In an op-ed for STAT, Jacobson and R. Sean Morrison, a geriatric and palliative medicine physician at Mount Sinai Health System, wrote: "Over the course of their lives, most people will develop one or more serious illnesses they will live with for many years. We have a treatment—palliative care—that can increase quality of life and longevity. It's past time to take the necessary steps to ensure that everyone has access to it."

Mireille Jacobson and Julie Zissimopoulos, Co-Directors, Aging and Cognition Program

By 2060, the share of the population over age 65 will have grown significantly.



2016
49 million people
age 65+
(15% of population)

2060
98 million people
age 65+
(25% of population)

COVID-19 has had tragic consequences for the elderly—but no one is immune. Our research reveals the pandemic's hidden costs.

From the pandemic's earliest days, Schaeffer Center experts have armed policymakers at all levels with the research-driven insights essential to improve access to care and reduce the burden of COVID-19.

COVID Initiative

Developing Analyses and Strategies to Ease the Pandemic's Damage

Uncovering COVID's Overlooked Toll

At first glance, statistics appear to support the common perception that COVID-19 does its worst damage among the elderly and vulnerable. But these grim numbers mask another reality—and focusing on them has biased policy decisions and individual choices.

Schaeffer Center researchers found that elderly *and* younger adult populations have borne a significant burden from the pandemic when measured by years of life lost. In total, over 9 million years of life were lost in the first year of the pandemic, with adults ages 25 to 64 accounting for 51% of these lost birthdays.

The analysis leveraged the Schaeffer Center's Future Elderly Model and Future Adult Model and was published in *Annals of Internal Medicine*.

"The focus on older people passing away from COVID misses the substantial burden COVID has imposed on younger people with chronic conditions like obesity," Darius Lakdawalla says. "Many people have emphasized that protections like lockdowns and vaccinations ought to focus on the old

"Disinterest in getting the vaccine increased among all groups when they were overlooked and had to wait for a vaccine. Public health officials should keep this dynamic in mind when developing plans in the future."

Wändi Bruine de Bruin, Co-Director, Behavioral Sciences Program

and the vulnerable. However, our findings contradict the belief that this is a pandemic primarily of the elderly."

Neeraj Sood is evaluating the impact of stay-at-home orders and other policy interventions aimed at stopping the spread of the virus. Published as a National Bureau of Economic Research working paper, his research finds that stay-at-home orders may have caused additional unintended harms and been largely ineffective in the U.S. in reducing excess mortality.

Understanding Disparities in Vaccination Rates

John Romley and Matthew Crane assessed the relationship between county COVID-19 vaccination rates and both social vulnerability and vaccine hesitancy to understand the link between these interconnected issues and vaccination uptake.

They found that nearly 20% of counties are associated with high levels of both hesitancy and social vulnerability and continue

9 MILLION

excess life-years lost during the first year of the COVID-19 pandemic

51%

of excess life-years lost during the first year of the pandemic were among adults younger than 65

Neeraj Sood, Director, COVID Initiative

to be most at risk of failing to achieve high vaccination coverage. Furthermore, their analysis, published in *Health Affairs*, showed vaccine hesitancy and social vulnerability have independently impacted vaccine rates—an important finding for policymakers.

By early August, counties with high hesitancy had an average vaccination rate 17% lower than counties with low hesitancy, even after adjusting for the Center for Disease Control and Prevention's social vulnerability index (SVI).

Meanwhile, disparities between counties with moderate to low SVI and high SVI were relatively smaller but have widened substantially. The coverage difference between low- and high-SVI counties increased from 1.8% in March 2021 to 4.6% in August 2021.

The way vaccines were initially allocated may also play a role in uptake, according to research by behavioral scientist Wändi Bruine de Bruin. She and Dana Goldman found that allocation practices may contribute to vaccine-hesitant individuals later refusing the shot when it is made available to them.

"Disinterest in getting the vaccine increased among all groups when they were overlooked and had to wait," Bruine de Bruin says. "Even among people who initially wanted the vaccine, a surprising share—16%—said they no longer wanted it after they were passed over. Public health officials should keep this dynamic in mind when developing plans in the future."

The study, published in the *Journal of Risk Research*, drew from consumer research showing that when people are overlooked during the initial allocation of a product they will lose interest. While COVID-19 vaccines are now widely available in the U.S., certain groups had to wait initially. In countries where supplies are limited, people are still waiting.

Contributing to the discussion about vaccines, Karen Mulligan and Jeffrey Harris authored a Schaeffer Center white paper evaluating the effectiveness of workplace vaccine mandates, finding that they are sound public policy. Furthermore, they argued, the federal government has an important role to play in endorsing these mandates while making sure vulnerable communities are protected.

Leveraging Rapid Antigen Testing for Schools

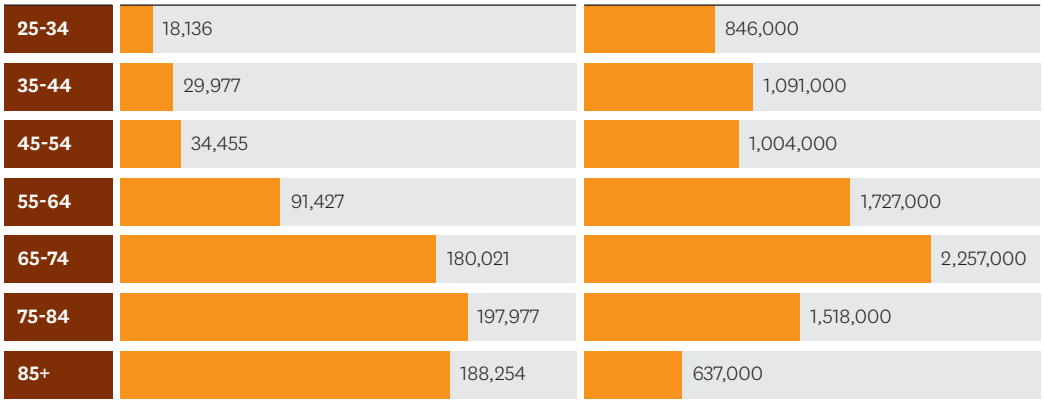
As we build a new normal, keeping kids safe in schools—while ensuring the best learning environment—is critical. Neeraj Sood led one of the first studies in the country evaluating the use of rapid antigen tests in children.

The tests show promise, especially if schools use serial testing, such as twice a week.

"Serial testing is critical because one-time antigen tests might not identify asymptomatic children at or shortly after the onset of infection," Sood says. "But serial testing will likely identify these children as they subsequently develop high viral loads and become infectious a few days later."

Sood presented his results to the California Department of Education as it was evaluating best practices for the state. He also presented at an expert panel for the National Academies of Sciences, Engineering and Medicine.

During the first year of the COVID-19 pandemic, life-years lost from premature mortality were distributed almost equally across elderly and younger adult populations.



Healthcare Markets Initiative

Providing Novel Market-Based Solutions to Deliver Value

"It was the inability to scale the development and deployment of diagnostic tests [that] was really at the root of a lot of our challenges with this coronavirus."

Scott Gottlieb, former FDA Commissioner

U.S. healthcare markets have many inefficiencies, resulting in both overuse and underuse of healthcare. The Schaeffer Center is conducting research to analyze the most appropriate market incentives for motivating individuals and stakeholders to improve the functioning of the healthcare system.

Adding Value to Older Heart Patients' Lives

Traditional treatments for valvular heart disease—a condition affecting more than 13% of adults age 75 and older—have been open-heart surgery or symptom management. But less invasive options are available, an important development for patients considered too high risk for conventional surgery.

Schaeffer Center researchers evaluated the social value of transcatheter aortic valve replacement (TAVR), finding it has the potential to generate billions in social value. Yet uptake remains low.

"More than half of aortic stenosis patients are still being medically managed instead of receiving TAVR," Darius Lakdawalla notes. Developing policies and procedures to incentivize

4.5

YEARS

length of time it took to secure regulatory approval for a new medical device and gain coverage from CMS as of 2019

TAVR use in appropriate patient populations should be an important priority for Medicare, he says.

Updating Regulation and Reimbursement

Millions of Americans rely on medical devices every day. Yet antiquated systems for regulating and paying for such advances can have serious consequences. For instance, shortages of COVID-19 tests have dramatically hindered the nation's response to the pandemic.

To address these issues, the Richard N. Merkin, MD, Distinguished Speaker Series hosted a talk with Nonresident Senior Fellow and former Director of the Domestic Policy Council Joe Grogan and former Food and Drug Administration (FDA) Commissioner Scott Gottlieb. Erin Trish moderated the conversation, which covered the challenges faced by the FDA and the Centers for Medicare & Medicaid Services (CMS) in ensuring that effective devices can be brought to patients more quickly.

"It was the inability to scale the development and deployment of diagnostic tests [that] was really at the root of a lot of our challenges with this coronavirus," Gottlieb said. "And it was largely a failure of the ability of the federal government to engage private industry early enough and do a handoff to private-sector medical-device manufacturers and get them into the game at the outset."

Grogan noted the differences between drugs and devices in terms of regulation and payments. For devices, he noted, it "frequently takes multiple years, through several different bureaucratic agencies at CMS … to prove … that your device or diagnostic is appropriate for the Medicare population. And private industry keys off of Medicare for figuring out what to cover or not."

New Leadership

Matthew Kahn, provost professor of economics at the USC Dornsife College of Letters, Arts and Sciences, will lead the Healthcare Markets Initiative along with Jakub Hlávka, research assistant professor at the USC Price School of Public Policy. Kahn is a nationally recognized environmental economist focused on urbanization, climate change, and the effects of these issues on health and quality of life.

"There is significant waste in the U.S. healthcare system," Kahn says. "Through the Healthcare Markets Initiative, we will bring together thought leaders to identify solutions that improve health outcomes and efficiency. The future of healthcare in this country depends on new approaches to these tough issues—and leveraging market forces may provide some clear answers."

Hlávka's research includes work on innovative payment models for pharmaceuticals, health system reform and the study of inequality. For example, pharmaceuticals are priced uniformly by convention, but many medicines have different levels of effectiveness in different patients. This is one of many market inefficiencies in drug pricing. Analysis by Hlávka, Darius Lakdawalla and Dana Goldman focused on the economics of alternative payment models to uniform pricing and highlighted challenges policymakers, payers and other stakeholders should be aware of as these options are considered.

While implementation faces numerous challenges, including regulatory and data-collection constraints, they predict value-based agreements for pharmaceuticals will be relied on more extensively as solutions to the implementation challenges are identified.

Jakub Hlávka and Matthew Kahn, leaders, Healthcare Markets Initiative

$10K

spent annually on healthcare per person

30%

of U.S. health spending is either medically wasteful or inappropriate

How do we expand access, improve patient protections and build a more affordable healthcare market?

The USC-Brookings Schaeffer Initiative for Health Policy unites the Schaeffer Center's data and analytic strengths with Brookings Institution's economic policy expertise. The initiative is a major resource for rigorous analysis and practical solutions relied upon by policymakers, private-sector leaders and the public.

USC-Brookings Schaeffer Initiative for Health Policy

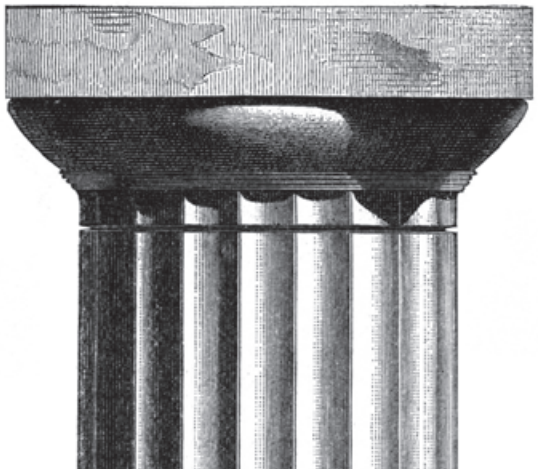
Informing the National Healthcare Debate

Taking the Sting out of Surprise Billing

Patients have long suffered financial strain from exorbitant surprise medical bills stemming from out-of-network care. Collaborative work under the Schaeffer Initiative has informed numerous pieces of legislation at the state and federal levels to protect consumers from this practice, also known as balance billing.

The most sweeping of these is the federal No Surprises Act, which went into effect January 1, 2022. In addition to making it illegal to bill patients for more than in-network cost sharing for certain services, the legislation establishes an arbitration process to resolve disputes between providers and insurers. Following the bill's passage, Schaeffer Initiative researchers continued to conduct analyses, examine the best ways to maximize its effectiveness and write recommendations for implementing the new law, many of which were adopted in the administration's rulemaking.

In a piece for Medpage Today, Loren Adler and Erin Trish noted that most doctors don't want to send balance bills to unsuspecting patients and that physicians not currently profiting from surprise billing "could see pay increases because of the law's new out-of-network price support."



Furthermore, the No Surprises Act will save money overall because it uses median in-network prices to guide payment decisions —a strategy outlined by the Schaeffer Initiative in early research. "The law is a big win for patients, employers and consumers," Adler and Trish write.

Bringing Expenses Down to Earth

When it comes to emergency services, air ambulances account for some of the highest surprise bills. Lack of competition is a factor as, by 2017, just two private equity firms had gained control of nearly two-thirds of the Medicare market for air-ambulance transport.

Analyzing commercial insurance claims data for 2014–2017, Loren Adler, Erin Trish and colleagues found that emergency medical air transports owned by private equity or publicly traded companies were paid an average of $32,051—5.6 times what Medicare would have paid. This is particularly concerning given that 89% of transports provided by private equity or publicly traded companies during this timeframe were out-of-network.

Fortunately, air-ambulance providers are among those covered by the No Surprises Act, which will protect patients from these surprise bills going forward and should lower prices. However, more can still be done to protect patients and improve the market.

Surprise bills also routinely come from specialty services such as anesthesiology. A study by Adler, Trish, Erin Duffy and Bich Ly sorted through various payment methods for anesthesiologists and certified registered nurse anesthetists, examining 3.59 million commercial and 1.87 million Medicare Advantage claims for common anesthesiology services.

They found that the mean, in-network commercial charge was 659% of the Medicare rate, while the allowed payments were 314% of that rate. The researchers suggest that policymakers "choose out-of-network payment benchmarks prudently" to avoid inflation when using the No Surprises Act as a guide to rein in these expenses. This analysis fills a critical gap in understanding complex payment structures for anesthesiology,

500+

media mentions quoting Schaeffer Initiative experts about the No Surprises Act

4

congressional committees met with Schaeffer Initiative experts to discuss the No Surprises Act

Richard Frank, Director, USC-Brookings Schaeffer Initiative for Health Policy

which have made it hard to reliably compare amounts charged across payers and patient populations.

New Director Named

The USC-Brookings Schaeffer Initiative for Health Policy appointed Richard Frank as its new director in September 2021. He succeeds Paul Ginsburg, who will continue his impactful work for the Center as a senior fellow.

Frank joined the initiative from Harvard Medical School, where he is the Margaret T. Morris Professor of Health Economics Emeritus in the Department of Health Care Policy. His research focuses on the economics of mental health and substance abuse care, financing for long-term care, prescription drug policy, healthcare competition and disability policy.

"The Schaeffer Initiative has had remarkable success informing health policy debates under the leadership of Dr. Ginsburg," Dana Goldman says. "These include issues such as surprise medical billing, the Affordable Care Act, market competition and drug pricing. Dr. Frank's record of scholarship and public service makes him the ideal appointment to continue to advance our collaboration."

From 2014 to 2016, Frank served as assistant secretary for planning and evaluation in the Department of Health and Human Services. His honors include election to the National Academy of Medicine's Institute of Medicine, the Georgescu-Roegen Prize, the Carl A. Taube Award from the American Public Health Association and the Academy-Health Distinguished Investigator Award.

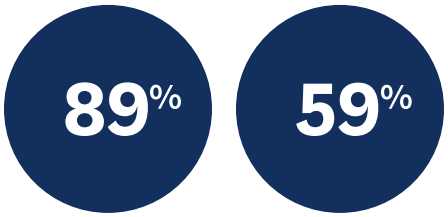
"With Dr. Ginsburg at the helm, the Schaeffer Initiative has informed policymakers and private-sector leaders about today's most pressing healthcare issues," notes Leonard D. Schaeffer, founder of the Schaeffer Center and the USC-Brookings Schaeffer Initiative for Health Policy. "I have no doubt that Dr. Frank will further enhance the initiative's ability to provide the research and analysis needed to improve health policy at the national level."

Forward-Looking Reforms

Richard Frank's leadership of the USC-Brookings Schaeffer Initiative for Health Policy builds on successes achieved under Paul Ginsburg while also adding new priorities—including a focus on mental health. As one of his first activities, Frank and his colleagues submitted a letter to the U.S. Senate Committee on Finance in response to a white paper on mental wellbeing by Senators Michael Bennet (D-Colorado) and John Cornyn (R-Texas).

Frank and his colleagues recommend aligning Medicaid, block grants, state and local funds, and private insurance for mental health services, as well as building on existing payment mechanisms in public insurance programs to increase accountability. Doing more, Frank and longtime colleague Sherry Glied say, "requires policymakers to think creatively about the use of resources—workforce and technology—combine operating funds with infrastructure investments, and demand much more accountability from all providers and funders in the system."

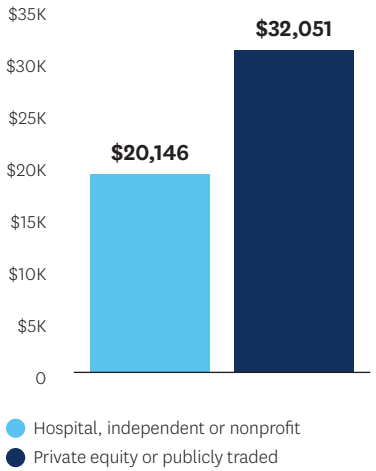
The share of air-ambulance rides that were likely to be out-of-network between 2014 and 2017 varied by ownership type.



of transports provided by private equity and publicly traded providers were out-of-network

of transports provided by hospitals, nonprofits and independent companies were out-of-network

Air-ambulance services by private equity companies significantly exceeded the cost of nonprofit providers.



"With Dr. Ginsburg at the helm, the Schaeffer Initiative has informed policymakers and private-sector leaders about today's most pressing healthcare issues. I have no doubt that Dr. Frank will further enhance the initiative's ability to provide the research and analysis needed to improve health policy at the national level."

Leonard D. Schaeffer, USC Schaeffer Center Founder and Advisory Board Chair

In a separate piece, Frank and Glied discussed the cost of mental illness in the workplace and the need for businesses to recognize the reality of mental health symptoms and allow for flexibility and accommodation at work. You can do this, they write, and still preserve productivity.

Prescription drug pricing reform continues to hold policymakers' and the public's attention. Loren Adler and Paul Ginsburg developed a framework for policymakers evaluating the wide range of proposals, noting the need for awareness of the trade-offs inherent in various policy options. One such trade-off is the balance between innovation and access. This is especially true in oncology, where accelerated approval of new drugs has the potential to improve cancer outcomes, but the cost is high and the value uncertain.

Frank proposed a model, published in *JAMA*, that would allow payers to only pay for cancer drugs that work. This would incentivize innovation while ensuring money spent on new therapies is well-used. In a piece published in the *New England*

2.2

MILLION

low-income people are unable to access affordable healthcare coverage because they live in a state that has not expanded Medicaid

20%

of working adults report significant symptoms of mental illness in the workplace over the course of a month

Journal of Medicine, Frank and colleagues elaborated on the trade-off between future innovation and regulating drug pricing. "These challenges are created in part by our system's failure to consistently establish prices that reflect treatments' clinical and economic value," they write.

Building Back Better Savings?

Among other initiatives, President Biden's Build Back Better (BBB) act aims to expand Medicaid and Medicare by increasing subsidized marketplace coverage for the uninsured—especially in those states that have chosen not to expand Medicaid—as well as reforming prescription pricing.

Matthew Fiedler explored this proposal's financial implications for hospitals. He estimated that the margins for hospitals in the 12 states that have not expanded Medicaid would improve by $11.9 billion if all related BBB proposals were put into effect, because they would be reimbursed for at least some services that currently go unpaid. However, BBB includes provisions to "claw back" some of this windfall through restrictions in other areas. By comparison, if Medicaid were implemented in these states, Fiedler calculated those hospitals would see $3.6 billion instead.

Fiedler also analyzed BBB prospects for adding hearing, vision and dental coverage to Medicare during congressional reconciliation and explored ways policymakers could cut the costs of adding this coverage without reducing its generosity.

Reinforcing the Affordable Care Act

Signed into law over a decade ago, the Affordable Care Act (ACA) expanded access to healthcare and insurance coverage to millions of people. Experts with the Schaeffer Initiative continue to analyze the effects of this complex legislation and offer evidence-based guidance aimed at improving the system's functioning.

At least 2.2 million low-income people living in the 14 states that have not expanded Medicaid are still unable to receive coverage from either traditional Medicaid or the individual marketplace. Richard Frank and Sherry Glied evaluated the various options policymakers could use to solve this critical gap in coverage in an issue brief published by Commonwealth Fund. The piece has been a resource for policymakers as they discuss proposals.

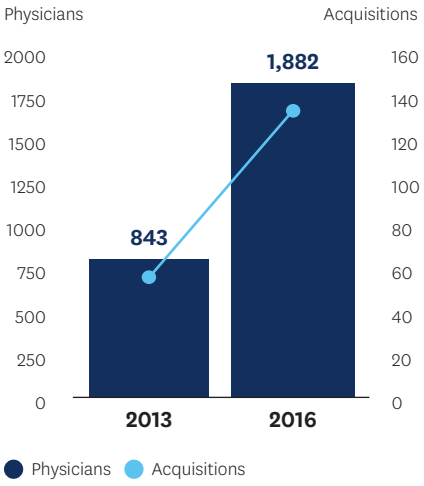
Evaluating Private Equity Investment's Impact on Markets

The growing number of physician-practice acquisitions by private equity has prompted concerns about potential effects on quality, prices and access to care.

Paul Ginsburg, Loren Adler, Erin Duffy and Samuel Valdez worked with colleagues to develop strategies for reducing the hazards of acquisitions, including closing payment loopholes that raise costs for consumers and taxpayers as well as strengthening antitrust and fraud enforcement.

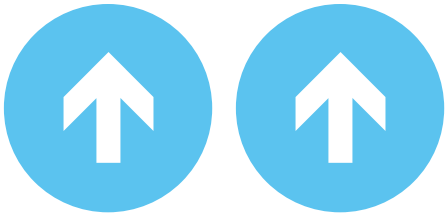
However, since private equity also carries benefits such as capital infusions that could aid patient care, the authors urge policymakers to balance the advantages and disadvantages when considering such policies.

Physician practice acquisitions by private equity firms increased between 2013 and 2016.



In 2013, 843 physicians were part of 59 acquisitions by private equity firms. In 2016, 1,882 physicians were part of 136 acquisitions by private equity firms.

Private equity investment in healthcare is rising exponentially.



$5 billion invested in the healthcare industry from private equity in 2000

$100 billion invested in the healthcare industry from private equity in 2018

Data and Microsimulation
Ensuring Evidence-Based Results and Modeling Trends

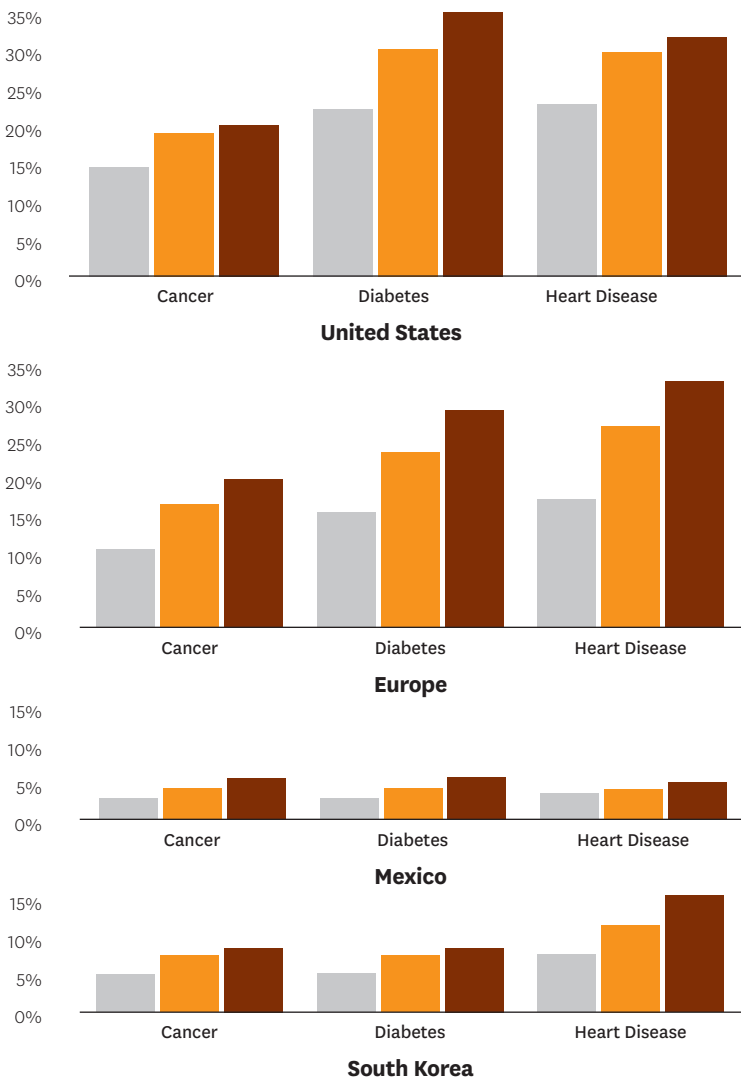
The Schaeffer Center's data core and microsimulation teams leverage the information and tools necessary to help answer significant questions in health policy with evidence-based solutions.

Data Core

The data core works to improve the quality and productivity of research through providing organized data resources, training and staff expertise. Including programmers, statisticians, analysts and a data resource administrator, the team has proficiency in the methods and programming necessary to rigorously analyze big data. Schaeffer Center fellows and students rely on this team for support on a range of projects.

Data Library and Data Security

The Schaeffer Center's data library includes survey data, public and private claims, contextual data and electronic health network data feeds. The data core is a pioneering information resource and computing environment that meets exacting standards



The microsimulation team has worked with researchers to build country-specific models to project trends in chronic conditions among adults ages 50 and older.

2014 2030 2050

75+

studies published that leverage the Schaeffer Center's microsimulation models

of excellence in data security through a mix of security measures—from an air-gapped workstation to state-of-the-art, Health Insurance Portability and Accountability Act (HIPAA)-compliant systems that include 24/7 monitoring to ensure resources are protected.

Health Policy Microsimulation

For more than a decade, the Schaeffer Center has been at the forefront of developing pioneering economic demographic microsimulation tools to effectively model future trends in health and longevity and answer salient questions in health policy. The centerpiece effort is the Future Elderly Model (FEM), which projects a rich set of health and economic outcomes for the U.S. population age 50 and older. The FEM was originally designed to answer questions about the long-term economic viability of the Social Security and Medicare programs. Schaeffer Center researchers have since used the FEM to explore an increasingly wide variety of policy questions, ranging from the fiscal future of the U.S. to the role that biomedical innovation can play in health outcomes.

The microsimulation team is building a network of collaborators to develop country-level, FEM-based models in nations around the world. This effort will allow researchers to compare demographic, health and economic trends on a global scale.

Researchers recently used the FEM to forecast long-term trends in disease dynamics in 15 countries. Focusing on investigating the consequences of policy and behavioral factors in healthy aging, including trends in chronic disease, education and behavioral factors like smoking, the researchers produced forecasting models that can be used by policymakers and stakeholders. Researchers involved in the project include two winners of the Nobel Prize in Economics, Daniel McFadden and James Heckman. This work resulted in eight papers published as part of a special issue of *Health Economics*.

Models have also gone local, with simulations conducted for California and Los Angeles County to help policymakers at the state and county levels understand trends and the impact of policy decisions.

Ultimately, the goal is to offer a tool to help policymakers weigh the pros and cons of potential policies, using actual evidence about impact when deciding where to put resources. Findings using the FEM and the related Future Adult Model have been published in top journals and cited or commissioned by government agencies, the White House, the National Academy of Sciences and private organizations interested in aging policy.

Data Partnerships and Collaborations

In addition to being a resource for Schaeffer Center researchers, the data core and microsimulation teams partner with local, state, federal and international collaborators to develop data projects and models. Key collaborators include the National Academies of Sciences, Engineering and Medicine, and the Los Angeles County Department of Public Health.

Bryan Tysinger, Director, Health Policy Microsimulation

83

data holdings to support Center research projects

317

users supported, up from 37 in 2011

USC Schaeffer Center

Impactful research requires dedicated support. Our unparalleled infrastructure makes us a vital hub for health economics and policy research.

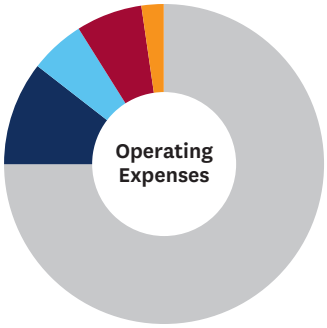
Our fellows and staff are interdisciplinary leaders who offer a broad spectrum of perspectives and insights. Among them are Nobel laureates, elected members of the National Academies of Sciences, Engineering and Medicine, and others who serve in key roles for committees at major government agencies. Our innovative data core provides sophisticated data and analytical support, and the Center is also home to pioneering economic demographic microsimulation tools. Our external affairs team develops creative and effective dissemination strategies that ensure Schaeffer research informs health policy, while our conferences, seminars, policy forums and webinars are attended by hundreds of people each year—and viewed later by many more online. Interdisciplinary training opportunities for students and scholars at all levels—from high school all the way to junior faculty—help build the next generation of thought leaders. The Schaeffer Center's work is funded by major federal entities, corporations, individuals and foundations and supported by an esteemed advisory board.

Schaeffer Center Financial Report

For fiscal year 2021 (July 1, 2020–June 30, 2021), total expenditures on the operating budget were $18.2 million. The operating budget includes compensation for faculty, scholars and staff, programmatic expenses and general operating costs. Faculty salaries that are covered by the schools are not included in these totals. Expenses by function are outlined in the graph below left.

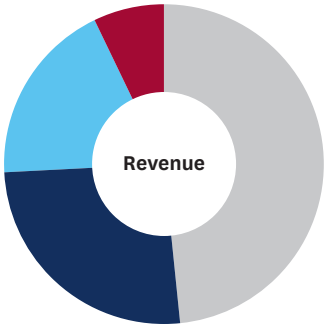
In fiscal year 2021, the Schaeffer Center funded $18.2 million in operating expenses from $24 million in current revenue. University support does not include faculty salaries covered by the schools. Since its inception, the Schaeffer Center has raised more than $153 million, the majority of which has come from federal grants.

81 federally funded projects spanning topics such as Alzheimer's disease, Medicare Part D, aging and health disparities



$18.2M
for fiscal year 2021

- **Research: $13.6M (75%)**
  Salaries, research expenses, initiatives and special projects
- **Data Core and Health Informatics: $2.0M (11%)**
  Salaries, data and data infrastructure
- **External Affairs: $1.0M (5%)**
  Salaries, development, communications and event expenses
- **Research Training Program: $0.4M (2%)**
  Salaries and training expenses
- **Administration: $1.2M (7%)**
  Salaries and general operating expenses



$153.7M
(inception through June 30, 2021)

- **Government: $74.3M (48%)**
  National Institutes of Health, Centers for Medicare & Medicaid Services, and other government sources
- **Corporations: $40.0M (26%)**
  Industry
- **Individuals and Foundations: $28.7M (19%)**
  Foundations, family foundations and individuals
- **USC and Others: $10.7M (7%)**
  University support and miscellaneous income

Conflict of Interest Policy

The USC Leonard D. Schaeffer Center for Health Policy & Economics conducts innovative, independent research that makes significant contributions to policy and health improvement. Center experts pursue a range of priority research areas focused on addressing problems within the health sphere. Donors may request that their funds be used to address a general research priority area, including:

- Improving the performance of healthcare markets
- Fostering better pharmaceutical policy and regulation
- Increasing value in healthcare delivery
- Improving health and reducing disparities throughout the lifespan

Schaeffer Center funding comes from a range of sources, including government entities, foundations, corporations, individuals and endowment. At all times, the independence and integrity of the research is paramount and the Center retains the right to publish all findings from its research activities. Funding sources are always disclosed. The Center does not conduct proprietary research.

As is the case at many elite academic institutions, faculty members associated with the USC Schaeffer Center are sought for their expertise by corporations, government entities and others. These external activities (e.g., consulting) are governed by the USC Faculty Handbook and the university's Conflict of Interest in Professional and Business Practices and Conflict of Interest in Research policies. All outside activities must be disclosed via the university's online disclosure system, diSClose, and faculty must adhere to all measures put in place to manage any appearance of conflict.

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Numerous public and private funders provide grants, gifts and sponsorships that help advance our work.

Thank you! Your generosity contributes to the work of the Schaeffer Center—from groundbreaking, multidisciplinary research to national conferences and fellowships—all of which helps us pursue innovative solutions to improve healthcare delivery, policies and outcomes.

The Schaeffer Center gratefully acknowledges the following fiscal year 2021 supporters:

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Schaeffer Center Research Training Program

In partnership with the USC School of Pharmacy and USC Price School of Public Policy, the USC Schaeffer Center prepares the next generation of health policy researchers to bring innovation and expertise to higher education, government, healthcare and research institutions. The Center's Research Training Program has developed a network of scholars from throughout the U.S. and around the globe.

National Institutes of Health-Funded Pilot Opportunities

USC Center for Advancing Sociodemographic and Economic Study of Alzheimer's Disease and Related Dementias

An interdisciplinary research center established through a partnership with the Schaeffer Center, University of Texas at Austin Population Research Center and Stanford Health Policy, the USC Center for Advancing Sociodemographic and Economic Study of Alzheimer's Disease and Related Dementias (CeASES-ADRD) works to advance innovative social science research in Alzheimer's disease and related dementias, increase and diversify the number of researchers working in the field, and disseminate findings for impact. Funded through the National Institutes of Health, this mission is accomplished through network meetings, workshops, pilot project support and the annual Science of ADRD for Social Scientists Program (see page 38).

USC Alzheimer's Disease Resource Center for Minority Aging and Health Economics Research

Aiming to increase the number, diversity and academic success of junior faculty who are focusing their research on the health and economic wellbeing of minority elderly populations, the USC Alzheimer's Disease Resource Center for Minority Aging and Health Economics Research (USC-AD RCMAR) has cultivated 27 early-career scholars since its launch in 2012. It is funded through a grant from the National Institute on Aging with additional support from the USC Office of the Provost, Price School of Public Policy and School of Pharmacy. Collaborating centers include the USC Roybal Center for Behavioral Interventions in Aging, USC Edward R. Roybal Institute on Aging, USC Roybal Center for Financial Decision Making and Financial Independence in Old Age, USC Alzheimer Disease Research Center, and USC/UCLA Center on Biodemography and Population Health.

7 training programs

5 master's programs

2 doctor of philosophy programs

USC Roybal Center for Behavioral Interventions in Aging

By developing and testing interventions based on insights from behavioral science to promote healthy aging, the USC Roybal Center for Behavioral Interventions in Aging aims to strengthen the ability of clinicians to recommend the safest, most effective treatments for patients. The center conducts research that advances healthy aging for older adults who are economically insecure, culturally diverse and underserved by human services organizations. It funds pilot projects proposed by senior and junior researchers from academic and research institutions focused on the consequences of current patterns of practice and development of interventions that will improve care delivery, quality of care and value to aging adults.

Additional Opportunities

Price School Diversity Initiative for Visiting Distinguished Scholars

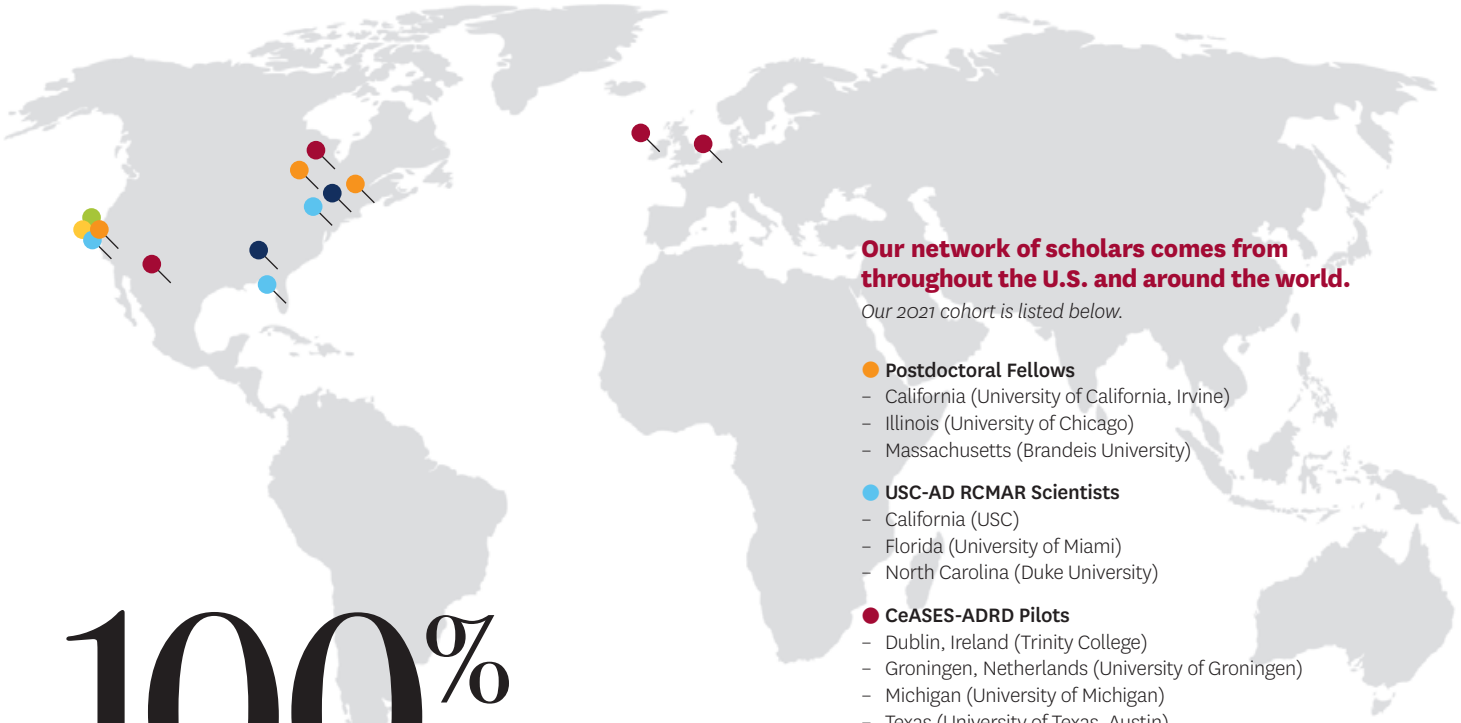
The USC Price School is partnering with historically Black colleges and universities as part of a new pilot program to promote research, engage diverse populations, provide mentorship opportunities, foster dialogue among faculty and students, and bring innovative work to our research centers. The two scholars chosen for the inaugural year—Jevay Grooms and Miesha Williams—are working with Schaeffer Center experts on a variety of research areas, including addressing racial disparities in federal funding and substance abuse disorder among vulnerable populations.

Clinical Fellowships

The clinical fellows program fosters collaboration between Schaeffer Center fellows and exceptional early-career scholars, clinical researchers and thought leaders. The program provides training and support for grants, papers and ongoing research projects.

Predoctoral Fellowships

Predoctoral students in related programs in the School of Pharmacy, Price School of Public Policy, and USC Dornsife College of Letters, Arts and Sciences conduct research under the guidance of a Schaeffer Center fellow, gaining knowledge and experience relevant to their doctoral program.



Our network of scholars comes from throughout the U.S. and around the world.

Our 2021 cohort is listed below.

- **Postdoctoral Fellows**
  - California (University of California, Irvine)
  - Illinois (University of Chicago)
  - Massachusetts (Brandeis University)
- **USC-AD RCMAR Scientists**
  - California (USC)
  - Florida (University of Miami)
  - North Carolina (Duke University)
- **CeASES-ADRD Pilots**
  - Dublin, Ireland (Trinity College)
  - Groningen, Netherlands (University of Groningen)
  - Michigan (University of Michigan)
  - Texas (University of Texas, Austin)
- **Roybal Center Pilots**
  - California (USC)
- **Clinical Fellows**
  - Los Angeles (Keck USC, Children's Hospital Los Angeles, UCLA)
- **Price School Diversity Initiative for Visiting Distinguished Scholars**
  - Georgia (Morehouse College)
  - Washington, D.C. (Howard University)

100%

of Schaeffer Center trainees go on to careers in healthcare or health policy in academic, private and public-sector organizations

Postdoctoral Fellowships
Scholars chosen for our prestigious postdoctoral fellowships focus completely on research, with no teaching requirement. They receive one-on-one mentoring to support development of their individual research agendas and collaborate with other Schaeffer Center researchers.

USC Schaeffer Center Summer Internships
Each summer, the USC Schaeffer Center welcomes outstanding graduate, undergraduate and high school students to gain hands-on experience and mentorship in health policy research and data analysis as well as an introduction to the field of health economics through a three-week intensive internship program. Interns are paired with a Schaeffer Center mentor and given resources to conduct a tailored research project.

Research Assistantships
Students from relevant disciplines—such as economics, public policy, health policy, statistics, medicine and psychology—work directly with Schaeffer Center fellows on specific research projects, attaining valuable experience and skills to further their research proficiency.

USC Science of Alzheimer's Disease and Related Dementias for Social Scientists Program
This annual program consists of informative and interactive lectures presented by national biomedical experts. Social scientists—from junior to advanced—who are interested in conducting research on Alzheimer's and related dementias can apply to participate. The program is funded by the National Institute on Aging.

Through our programs, we develop innovators for positions in higher education, research, government and healthcare. Distinctions include:

- One-on-one mentorship and opportunities to collaborate with distinguished investigators in the field
- Dedicated, full-time administrative and data support at the USC Schaeffer Center, and access to university-wide educational and career-development resources
- Equipping trainees with sophisticated data-analysis tools and resources
- Numerous professional development opportunities, including support for grant writing, publication in peer-reviewed journals, and travel for attending and presenting at major conferences
- Assistance in securing influential positions in prestigious academic, public and private settings

Julie Zissimopoulos, Director, and Briana Taylor, Senior Program Administrator, Research Training Program

For more information on our Research Training Program, please reach out to:
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Director, Research Training Program
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Senior Program Administrator, Research Training Program
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Schaeffer Center
Events and Seminars

23

conferences, seminars, policy forums and webinars in 2021

How to Encourage Vaccine Adoption

January 7, 2021

Scientific innovation was put to the test during the pandemic and, in record time, resulted in two vaccines, Pfizer/BioNTech and Moderna, that proved to be at least 94% effective in clinical trials. Despite polling showing that Americans' willingness to take the vaccine was growing, certain segments of the population continued to voice hesitation. In collaboration with the USC-Brookings Schaeffer Initiative for Health Policy and the USC Behavioral Science and Well-Being Policy Initiative, **Dana Goldman**, PhD, hosted a panel discussion on how public health leaders could address vaccine hesitancy.

Panelists included:

***Richard E. Besser**, MD, president and CEO, Robert Wood Johnson Foundation*

***Wändi Bruine de Bruin**, PhD, co-director, Behavioral Sciences Program, USC Schaeffer Center*

***Alison Buttenheim**, PhD, MBA, scientific director, Center for Health Incentives and Behavioral Economics, University of Pennsylvania*

***Jason Doctor**, PhD, co-director, Behavioral Sciences Program, USC Schaeffer Center*

The Richard N. Merkin, MD, Distinguished Speaker Series brings together prominent policymakers, experts and industry leaders to inform pressing debates in health policy. Merkin's philanthropic leadership and commitment to improving healthcare made this speaker series possible.

Richard N. Merkin, MD Distinguished Speaker Series

Paying for Cell and Gene Therapy in Medicare

January 29, 2021

The first gene therapy, chimeric antigen receptor cell therapy (CAR-T), was approved by the Food and Drug Administration (FDA) in 2017 after it showed remarkable results

in certain blood cancers. But it took three years for the Centers for Medicare & Medicaid Services (CMS) to approve a payment structure for hospitals so Medicare patients could access this breakthrough. **Dana Goldman**, PhD, was joined by **Kathy Buto**, MPA, commissioner on the Medicare Payment Advisory Commission (MedPAC), and **Jeet Guram**, MD, former senior adviser to CMS and the FDA, to discuss policy lessons learned and potential solutions for patient access to future cell and gene therapies.

How Can the Biden Administration Improve the Medicaid Program?

February 3, 2021

A partnership between the federal government and the states, the Medicaid program provides health coverage to over 70 million Americans. It plays a critical role in ensuring that people with low incomes and those with disabilities get the healthcare they need and are financially protected if they get sick. **Matthew Fiedler**, PhD, moderated an expert panel discussing ways the federal government can work with states to improve Medicaid, including restructuring eligibility rules, enrollment processes and benefit designs as well as approaches that could improve the quality and efficiency of care.

Panelists included:

***Valerie Nurr'araaluk Davidson**, president, Alaska Pacific University*

***Dan Tsai**, deputy administrator, CMS; director, Center for Medicaid and CHIP Services; former assistant secretary, MassHealth*

***Vikki Wachino**, principal, Viaduct Consulting; former CEO, Community Oriented Correctional Health Services*

***Jennifer Wagner**, director of Medicaid Eligibility and Enrollment, Center on Budget and Policy Priorities*

5

webinars hosted through the Richard N. Merkin, MD Distinguished Speaker Series in 2021

Richard N. Merkin, MD Distinguished Speaker Series

Improving and Accelerating Vaccine Distribution

March 4, 2021

Widely varying distribution strategies created significant disparities in who was receiving the COVID-19 vaccine in the initial period of availability. **Dana Goldman**, PhD, moderated a discussion about the state of vaccine distribution: what's working, what's not and where efforts should be focused.

Panelists included:

***Vassilios Papadopoulos**, DPharm, PhD, DSc (hon), dean, USC School of Pharmacy*

***Neeraj Sood**, PhD, COVID Initiative director, USC Schaeffer Center; vice dean for research, USC Price School of Public Policy*

***Leana S. Wen**, MD, MSc, research professor of health policy and management, George Washington University*

Will Medicare Run Out of Money?

March 16, 2021

Medicare's Hospital Insurance Trust Fund, also known as Medicare Part A, is projected to run out of reserves in five years. Meanwhile, clear opportunities exist to make all parts of the Medicare program operate more efficiently and effectively. Yet, despite repeated warnings from experts, problems remain unresolved. In cooperation with the Bipartisan Policy Center and the American Enterprise Institute, **Dan Diamond**, national health reporter for the *Washington Post*, moderated a panel discussion about policy options to place the Medicare program on a better track.

Panelists included:

***Shawn Bishop**, chief health adviser, Senate Finance Committee, Majority Staff*

***Kathy Buto**, MPA, commissioner, MedPAC*

***James C. Capretta**, senior fellow and Milton Friedman Chair, American Enterprise Institute*

***Matthew Fiedler**, PhD, fellow, USC-Brookings Schaeffer Initiative for Health Policy*

***Amy Hall**, MPA, staff director, Subcommittee on Health, House Ways & Means Committee, Majority Staff*

***Mark Miller**, executive vice president of healthcare, Arnold Ventures; former executive director, MedPAC*

***Stephanie Parks**, staff director, Committee on Health, House Ways & Means Committee, Minority Staff*

Richard N. Merkin, MD Distinguished Speaker Series

Dividing Americans: How Education, More Than Race, Is Driving Life Expectancy Disparities in Adulthood

March 16, 2021

Men and women with a bachelor's degree are living longer and prospering more compared to adults without a college degree, according to research by **Anne Case**, PhD, Alexander Stewart 1886 Professor of Economics and Public Affairs Emeritus at Princeton University, and **Sir Angus Deaton**, PhD, Distinguished Fellow at the USC Schaeffer Center and the Presidential Professor of Economics at the USC Dornsife College of Letters, Arts and Sciences. For those without a college degree, adult life expectancy has declined for most of a decade in the U.S. Over the past 30 years, racial divides have narrowed while educational divides have grown. **Dana Goldman**, PhD, moderated a discussion with Case and Deaton on these divisive trends.

COVID-19 Changed Healthcare Decision-Making. What Does It Mean for the U.S. Healthcare System? (Part 1)

March 23, 2021

Periods of high and rising cases of COVID-19 quickly pushed health systems past capacity, forcing providers to cancel non-COVID procedures. Further, patients now recognize that physician visits and procedures that once seemed routine carry the risk of exposure to a highly transmissible and dangerous disease—and 41% of U.S. adults skipped care during the pandemic. The first day of this two-part series explored how the pandemic has changed the ways Americans make healthcare decisions, with a panel moderated by **Erin Trish**, PhD.

Panelists included:

***Suzanne J. Baron**, MD, MSc, director, interventional cardiology research, Lahey Hospital and Medical Center*

***Otis W. Brawley**, MD, Bloomberg Distinguished Professor of Oncology and Epidemiology, Johns Hopkins University*

***Wändi Bruine de Bruin**, PhD, co-director, Behavioral Sciences Program, USC Schaeffer Center*

***Emmett Keeler**, PhD, nonresident senior fellow and quality assurance director, USC Schaeffer Center; professor, Pardee RAND Graduate School*

COVID-19 Changed Healthcare Decision-Making. What Does It Mean for the U.S. Healthcare System? (Part 2)

March 24, 2021

In response to changing patient preferences as a result of COVID-19, health systems and policymakers have had to rethink how to provide and pay for care that patients value. For example, telehealth has become an acceptable and widespread alternative approach to patient care, and payers have stepped up to reimburse the service. But some healthcare must be delivered in person, and patients want reassurance that they will be safe from infectious diseases, even after the current crisis is over. The second day of this two-part series focused on whether the U.S. health system is ready to equitably meet new demands to provide and pay for "patient-centric" care, with a panel moderated by **Darius Lakdawalla**, PhD.

Panelists included:

***Pamela Kehaly**, president and CEO, Blue Cross Blue Shield of Arizona*

***Bob Kocher**, MD, nonresident senior fellow, USC Schaeffer Center; partner, Venrock*

***Dan Mendelson**, CEO, Morgan Health, JPMorgan Chase & Co.; founder and former CEO, Avalere Health*

***Thomas M. Priselac**, president and CEO, Cedars-Sinai Health System*

25th Annual Wall Street Comes to Washington Healthcare Roundtable

April 9, 2021

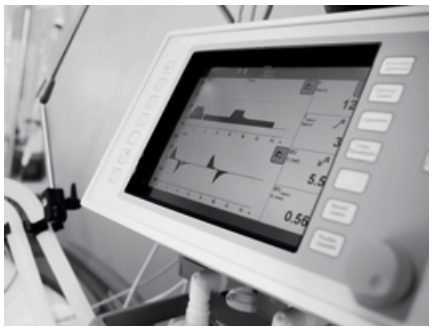
The COVID-19 pandemic has stressed some hospitals to the breaking point. At the same time, the pandemic has spurred innovations in care delivery, particularly telehealth. Accounting for nearly one-fifth of the U.S. economy, healthcare is bigger business than ever as the nation works toward recovery. Federal health policies have large impacts on financing and delivery, and understanding emerging healthcare market trends and their implications can provide critical context for policymakers. This annual event was designed to bridge the worlds of Wall Street and Washington health policy. An expert panel of equity analysts was moderated by **Paul Ginsburg**, PhD.

Panelists included:

***Matthew Borsch**, CFA, managing director, BMO Capital Markets*

***Ricky Goldwasser**, managing director, Morgan Stanley*

***George Hill**, managing director, Deutsche Bank*



Can Health Technology Assessment Control Spending and Reward Innovation?

June 8, 2021

Unlike other advanced nations, the United States does not have a coordinated process to evaluate the effectiveness and value of new devices, medicines or procedures. Could an Institute of Health Technology Assessment facilitate more rational decisions on healthcare that reward both innovation and quality across the entire spectrum of care? **Rachel Cohrs**, Washington correspondent for STAT, moderated a conversation—held in cooperation with the Aspen Institute—with the authors of a recently released white paper that paves the way for a new approach to health technology assessment in the U.S.

Panelists included:

***Lee A. Fleisher**, MD, chief medical officer and director, Center for Clinical Standards and Quality, CMS*

***Ruth Katz**, JD, MPH, vice president and executive director, Health, Medicine and Society Program, Aspen Institute*

***Darius Lakdawalla**, PhD, director of research, USC Schaeffer Center; Quintiles Chair in Pharmaceutical Development and Regulatory Innovation, USC School of Pharmacy; professor, USC Price School of Public Policy*

***Peter J. Neumann**, ScD, director, Center for the Evaluation of Value and Risk in Health, Institute for Clinical Research and Health Policy Studies, Tufts Medical Center; professor of medicine, Tufts University*

***Adrian Towse**, MA, MPhil, director emeritus and senior research fellow, UK Office of Health Economics*

***Gail R. Wilensky**, PhD, economist and senior fellow, Project HOPE*

Leveraging Precision Medicine to Meet Patient Needs

June 15, 2021

Part 1 of a four-part series on precision medicine

Precision medicine promises to reduce adverse side effects and time-consuming trial-and-error processes, but many patients do not know what it is and providers struggle to leverage it effectively. **Arlene S. Bierman**, MD, MS, director of the Center for Evidence and Practice Improvement at the Agency for Healthcare Research and Quality, moderated a discussion of how precision medicine can better address patients' needs.

Panelists included:

***Rhoda Au**, PhD, professor of anatomy and neurobiology, Boston University School of Medicine*

***Pavan Bhargava**, MBBS, MD, associate professor of neurology, Johns Hopkins University School of Medicine*

***Wenora Johnson**, cancer research/patient advocate*

2,600

views of the 25th Annual Wall Street Comes to Washington Healthcare Roundtable, making it the most watched Schaeffer event in 2021

Measuring Real-World Effectiveness and Value

June 17, 2021

Part 2 of a four-part series on precision medicine

Precision therapies are often approved based on small trials in specialized settings using biomarkers as endpoints. Thus, despite their potential high cost, evidence of value is lacking, making real-world evidence crucial. **Darius Lakdawalla**, PhD, led a discussion about how we should measure and leverage real-world data to assess the value of precision medicine, with panelists **Kay M. Larholt**, ScD, director of research at NEWDIGS Center for Biomedical Innovation, Massachusetts Institute of Technology, and **Megan O'Brien**, PhD, MPH, executive director of the Global Center for Observational and Real-World Evidence at Merck.

Using Precision Medicine in Clinical Practice

June 22, 2021

Part 3 of a four-part series on precision medicine

Despite its promise and multimillion-dollar federal investments, the development and implementation of precision medicine in routine clinical care continues to be slow. **Dana Goldman**, PhD, moderated a discussion of how we can incentivize and accelerate the use of precision medicine to benefit more patients, with panelists **Jennifer Malin**, MD, PhD, senior vice president and chief medical officer at Optum and clinical professor of medicine at UCLA, and **John D. Carpten**, MD, PhD, professor and chair of translational genomics, director of the Institute of Translational Genomics, and the Royce and Mary Trotter Chair in Cancer Research at the Keck School of Medicine of USC.

Developing Effective Payment and Reimbursement Models

June 29, 2021

Part 4 of a four-part series on precision medicine

Targeted therapies can come with significant costs. But successful use of personalized medicine can also result in better healthcare outcomes and reduced long-term costs over time. Given this, how we pay for these therapies may require new approaches and models. **Erin Trish**, PhD, led a discussion about the challenges and opportunities in developing viable payment solutions for precision medicine, with panelists **Kathryn A. Phillips**, PhD, founding director of the Center for Translational and Policy Research on Personalized Medicine, and clinical professor at the University of California, San Francisco, and **Michael Sherman**, MD, MBA, MS, chief medical officer, Point32Health.

Drug Rebates in Medicare Part D

July 27, 2021

Prescription drug prices have risen sharply in recent decades in the United States. Underlying this trend is a widening gap between list and net prices for many drugs due to increasing use of rebates. As a result, patients who use expensive drugs with large rebates are paying substantially more because deductibles and co-insurance amounts are typically based on list prices, a problem particularly affecting Medicare Part D coverage. **Erin Trish**, PhD, presented research on the increasing magnitude of rebates in Part D and the implications for beneficiaries and federal spending, followed by a panel discussion led by **Paul B. Ginsburg**, PhD.

Panelists included:

***Anna Anderson-Cook**, PhD, senior fellow, Arnold Ventures*

***John O'Brien**, PharmD, MPH, president and CEO, National Pharmaceutical Council*

***Matt Perlberg**, MBA, senior vice president, supply chain, Express Scripts*

Leveraging Behavioral Sciences for Dementia Care

September 17, 2021

Making medical decisions amid uncertainty is challenging for Alzheimer's and dementia patients, caregivers and care teams. Insights from the behavioral sciences may help doctors detect dementia earlier and develop more insightful care plans. **Julie Zissimopoulos**, PhD, co-moderated a discussion about how the tools of behavioral sciences can be leveraged for better dementia care with panelists **Lisa M. Walke**, MD, MSHA, chief of the Division of Geriatric Medicine at the Perelman School of Medicine, University of Pennsylvania, and **Joanna Lee Hart**, MD, MSHP, assistant professor of medicine at the Perelman School of Medicine, University of Pennsylvania.

Richard N. Merkin, MD Distinguished Speaker Series

Regulating Cannabis for Public Health

October 13, 2021

Congress is moving toward federal legalization of cannabis, triggering important considerations for policymakers on issues of health, safety and equity. A patchwork of state regulations has grown up that leaves the health of U.S. consumers in peril. An example of a more inclusive approach can be found across the border, where Canada fully legalized cannabis in 2018 and regulates production, distribution and consumption similarly to alcohol. **Rosalie Liccardo Pacula**, PhD, led a conversation about the challenges of regulating cannabis with panelists **Ricky N. Bluthenthal**, PhD, professor and associate dean for social justice at the Keck School of Medicine of USC, and **Rebecca Jesseman**, MA, director of policy at the Canadian Centre on Substance Use and Addiction.

Getting It Right: Drug Pricing Reform That Works for Patients and the Medicare Program

October 14, 2021

As Congress narrows in on prescription drug pricing reform, what policy changes should be prioritized? Presented in partnership with the Alliance for Aging Research, this panel included Congressman **Scott Peters**, JD, (D-California), a policymaker at the center of the debate in Congress, an expert in healthcare policy research and a leading advocate for older adults. **Sue Peschin**, MHS, president and CEO, Alliance for Aging Research, was moderator of the panel, which also included **Erin Trish**, PhD, and **Michael Ward**, MS, vice president of public policy at Alliance for Aging Research.

Richard N. Merkin, MD Distinguished Speaker Series

Medical Device Regulation and Reimbursement: What the Pandemic Revealed

October 27, 2021

Throughout the COVID-19 pandemic, diagnostics played a key role, and test shortages dramatically hindered America's response. While the pandemic showed the value of public-private partnerships through Operation Warp Speed, it also revealed how antiquated systems for regulating and paying for new devices and diagnostics can hurt patients and public health. **Scott Gottlieb**, MD, senior fellow at the American Enterprise Institute and former FDA commissioner, discussed his book, *Uncontrolled Spread*, about why the American healthcare system was overwhelmed in the face of a global pandemic due to key regulatory failures and structural reimbursement problems. **Erin Trish**, PhD, led the panel, which also included **Joseph Grogan**, JD, nonresident senior fellow at the USC Schaeffer Center, former assistant to President Donald J. Trump and a former director of the Domestic Policy Council.

Seminar Series

Our Seminar Series features prominent academics, researchers, policymakers and industry leaders discussing timely themes in health policy and economics. The seminars prioritize informal discussions with an audience. The 2021 seminars included the following featured speakers:

***Neha Bairoliya**, PhD, assistant professor, Department of Finance and Business Economics, USC Marshall School of Business: "Understanding the Retirement Annuity Puzzle"*

***Rosemary Batt**, PhD, Alice Hanson Cook Professor of Women and Work, ILR School, Cornell University: "Private Equity in Healthcare: Profits versus Patients"*

***Lisa A. Robinson**, MPP, deputy director and senior research scientist, Center for Health Decision Science, Harvard T.H. Chan School of Public Health: "Valuing COVID-19 Mortality and Morbidity Risk Reductions"*

Schaeffer Center
Select Publications

Darius Lakdawalla, Director, Research

290+

citations of research by Schaeffer Center fellows in government documents and reports since 2009

White Papers

Frasco, M. A., and **E. Trish**. (2021). Targeting Affordability in Healthcare: A Review of the Evidence.

Lakdawalla, D., **D. Goldman**, **K. Van Nuys** and D. Mendelson. (2021). Reassessing the Value of Minimally Invasive Technologies in the Era of COVID-19.

Leaf, D. E., S. Mattke, **B. Tysinger** and **D. Lakdawalla**. (2021). The Social Value of Disseminating Transcatheter Aortic Valve Replacement.

Lakdawalla, D., P. J. Neumann, G. R. Wilensky, A. Balch, J. A. Doshi, L. P. Garrison, M. A. Hamburg, **J. W. Hay**, Z. M. Khan, F. B. Kristensen, S. Nussbaum, D. A. Ollendorf, **W. Padula**, C. E. Phelps, D. G. Safran, M. J. Sculpher, S. R. Tunis, **D. Goldman**, R. Katz, **K. Mulligan** and **D. Peneva**. (2021). Health Technology Assessment in the U.S.: A Vision for the Future.

May, P., **B. Tysinger**, R. S. Morrison and **M. Jacobson**. (2021). Advancing the Economics of Palliative Care: The Value to Individuals and Families, Organizations and Society.

Mulligan, K. (2021). The 340B Drug Pricing Program: Background, Ongoing Challenges and Recent Developments.

Mulligan, K., and J. E. Harris. (2021). COVID-19 Vaccination Mandates for School and Work Are Sound Public Policy.

Ward, A. S., **K. Van Nuys** and **D. Lakdawalla**. (2021). Impacts of First-in-Class Drug Approvals on Future in-Class Innovation.

Ward, A. S., **K. Van Nuys** and **D. Lakdawalla**. (2021). Reducing Racial Disparities in Early Cancer Diagnosis With Blood-Based Tests.

USC-Brookings Schaeffer Initiative for Health Policy White Paper Series

Adler, L., C. Milhaupt, **E. Trish** and **B. Ly**. (2021). Private Equity-Owned Air Ambulance Carriers Get Paid More Money and Are Out-of-Network More Often.

Fiedler, M. (2021). Enrollment in Nongroup Health Insurance by Income Group.

Fuse Brown, E., **L. Adler**, **E. Duffy**, **P. B. Ginsburg**, M. Hall and **S. Valdez**. (2021). Private Equity Investment as a Divining Rod for Market Failure: Policy Responses to Harmful Physician Practice Acquisitions.

McWilliams, J. M., **A. Chen** and M. E. Chernew. (2021). From Vision to Design in Advancing Medicare Payment Reform: A Blueprint for Population-Based Payments.

Steinwald, B., **P. Ginsburg**, C. Brandt and S. Lee. (2021). Medicare Advanced Imaging Payment: Dysfunctional Policy Making.

Journal Articles

Aranda, M. P., I. N. Kremer, L. Hinton, **J. Zissimopoulos** et al. (2021). Impact of Dementia: Health Disparities, Population Trends, Care Interventions, and Economic Costs. *Journal of the American Geriatrics Society*, 69 (7): 1774-83.

Atella, V., F. Belotti, D. Kim, **D. Goldman** ... and **B. Tysinger**. (2021). The Future of the Elderly Population Health Status: Filling a Knowledge Gap. *Health Economics*, 30 (S1): 11-29.

Barcellos, S., **M. Jacobson** and **A. A. Stone**. (2021). Varied and Unexpected Changes in the Well-Being of Seniors in the United States amid the COVID-19 Pandemic. *Plos One*, 16 (6): e0252962.

Bendavid, E., B. Mulaney, **N. Sood**, **S. Shah** et al. (2021). Covid-19 Antibody Seroprevalence in Santa Clara County, California. *International Journal of Epidemiology*, 50 (2): 410-19.

Biener, A. I., B. L. Chartock, C. Garmon and **E. Trish**. (2021). Emergency Physicians Recover a Higher Share of Charges From Out-Of-Network Care Than From In-Network Care. *Health Affairs*, 40 (4): 622-28.

Bravata, D., J. H. Cantor, **N. Sood** and C. M. Whaley. (2021). Back to School: The Effect of School Visits During COVID-19 on COVID-19 Transmission. National Bureau of Economic Research Working Paper No. w28645.

Bruine de Bruin, W., A. Ulqinaku and **D. P. Goldman**. (2021). Effect of COVID-19 Vaccine Allocation Strategies on Vaccination Refusal: A National Survey. *Journal of Risk Research*.

Chang, T., **M. Jacobson**, M. Shah et al. (2021). Financial Incentives and Other Nudges Do Not Increase COVID-19 Vaccinations Among the Vaccine Hesitant. National Bureau of Economic Research Working Paper No. w29403.

Chartock, B. L., **L. Adler**, **B. Ly**, **E. Duffy** and **E. Trish**. (2021). Arbitration Over Out-Of-Network Medical Bills: Evidence From New Jersey Payment Disputes. *Health Affairs*, 40 (1): 130-37.

Chen, C., K. Maung, J. W. Rowe … and **J. Zissimopoulos**. (2021). Gender Differences in Countries' Adaptation to Societal Ageing: An International Cross-Sectional Comparison. *The Lancet Healthy Longevity*, 2 (8): e460-69.

Cortez, C., O. Mansour, **D. M. Qato** et al. (2021). Changes in Short-Term, Long-Term, and Preventive Care Delivery in US Office-Based and Telemedicine Visits During the COVID-19 Pandemic. *JAMA Health Forum*, 2 (7): e211529.

Crane, M. A., R. R. Faden and **J. A. Romley**. (2021). Disparities in County COVID-19 Vaccination Rates Linked to Disadvantage and Hesitancy. *Health Affairs*, 40 (11): 1792-96.

Crane, M. A., A. Popovic, R. Panaparambil, A. I. Stolbach, **J. A. Romley** and K. G. Ghanem. (2021). Reporting of Infectious Diseases in the United States During the Coronavirus Disease 2019 (COVID-19) Pandemic. *Clinical Infectious Diseases*.

Crane, M. A., K. M. Shermock, S. B. Omer and **J. A. Romley**. (2021). Change in Reported Adherence to Nonpharmaceutical Interventions During the COVID-19 Pandemic, April-November 2020. *JAMA*, 325 (9): 883-85.

Duan, L., **J. N. Doctor**, J. L. Adams, **J. A. Romley** et al. (2021). Comparison of Direct Oral Anticoagulants Versus Warfarin in Patients With Atrial Fibrillation and Bioprosthetic Heart Valves. *American Journal of Cardiology*, 146: 22-28.

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Dana Goldman was appointed dean in July 2021 after serving as interim dean the previous year.

About the USC Schaeffer Center for Health Policy & Economics

The Leonard D. Schaeffer Center for Health Policy & Economics was established in 2009 at the University of Southern California through a generous gift from Leonard and Pamela Schaeffer. The Center reflects Mr. Schaeffer's lifelong commitment to solving healthcare issues and transforming the healthcare system.

Improving our healthcare system requires creative solutions, robust research methods and expertise in a variety of fields. A collaboration between the USC Price School of Public Policy and the USC School of Pharmacy, the Schaeffer Center brings together health policy experts, a seasoned pharmacoeconomics team, faculty from across USC—including the Keck School of Medicine, the Dornsife College of Letters, Arts and Sciences, the Dworak-Peck School of Social Work and the Viterbi School of Engineering—and affiliated researchers from other leading universities to solve the pressing challenges in healthcare.

In 2016, the Schaeffer Center partnered with the Center for Health Policy at the Brookings Institution to establish the USC-Brookings Schaeffer Initiative for Health Policy. This unique partnership benefits from the strengths of both organizations, producing data-driven health policy analysis with cogent policy solutions aimed at strengthening the U.S. healthcare system.

The Schaeffer Center offers the human and technical capacity necessary to conduct breakthrough interdisciplinary research and exceptional policy analysis, with some 75 distinguished scholars investigating a wide array of topics. Through partnerships with scholars and universities across the country and around the world, coupled with an unparalleled infrastructure and data resource collection, the Schaeffer Center has built a hub for health economics and policy work. The Schaeffer Center actively engages in developing excellent research skills in new investigators who can become innovators of the future while supporting the next generation of healthcare leaders in creating strong management, team building and communication skills.

The Schaeffer Center's vision is to be the premier research and educational institution recognized for innovative, independent research that makes significant contributions to policy and health improvement. Its mission is to measurably increase value in health through data-driven policy solutions, research excellence, and private and public-sector engagement. With an extraordinary breadth and depth of expertise, the Schaeffer Center has a vital impact on the positive transformation of healthcare.

The mission of the Leonard D. Schaeffer Center for Health Policy & Economics is to measurably improve value in health through evidence-based policy solutions, research excellence, and private and public-sector engagement.

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